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*Attached to Project C-1
"Farm Power + Machinery", BPI SAE
Information Sheet dated 5/12/47.*

Expanded historical statement

About the first farm equipment investigations by the Department were made shortly after 1900 and were confined largely to field surveys reflecting the use of different types of power and machinery. In the years 1914-15 studies of dust explosions of threshers were conducted in the Palouse region of the Pacific Northwest when severe losses were being suffered. The dust from the grain being threshed caused an ignitable mixture which would be touched off by sparks - either static electricity from the belting or from stones or pieces of metal coming in contact with the cylinder or concave teeth. This was a cooperative project between the Bureau of Chemistry and the Rural Engineering Division of the Bureau of Public Roads.

Studies of equipment for applying dust insecticides to control the cotton boll weevil were conducted in Louisiana from 1917-31 on both ground machines and airplanes. The success attained by the airplane attachments developed on this project in effecting control led to the formation of companies that made a business of dusting large acreages of cotton.

In 1924 the fertilizing distributing machinery studies were inaugurated. The first assignment was the development and construction of a constant temperature-humidity control room following the observation that certain fertilizers varied, throughout the day, in their discharge rates from fertilizer attachments of seeding machinery. This was of course due to moisture being absorbed from the air by the more hygroscopic materials and led up to the fertilizer distributing machinery project now Nation-wide in scope.

In 1926 and 1927 a survey was made by J. B. Davidson and H. B. Walker, respectively, of the farm mechanical equipment research under way, projected, and needed, at the state agricultural experiment stations.

During the period 1926-35 a forage crop drying project at the New Iberia Livestock Farm of the U. S. Department of Agriculture was conducted. Feeding tests of a dairy herd and other livestock were made with different kinds of hay dehydrated both by rotary drum and conveyor type driers.

In 1927-28 studies were made of the use of power and machinery in Pennsylvania with special reference to costs.

In 1927 the European corn borer clean-up campaign was inaugurated and research started on corn borer control machinery. These investigations and other pest control machinery studies were combined from time to time and led up to the present pest and plant disease control machinery project centered at Toledo, Ohio.

In 1928 sugar beet machinery investigations were started - the work of the first couple years consisting of a survey of the field and in conducting preliminary studies. This project, except for the year 1943, has continued since that time - up to 1943 Colorado Agricultural Experiment Station and California Agricultural Experiment Station cooperating, and Colorado and Michigan Agricultural Experiment Stations now cooperating with headquarters at Fort Collins, Colorado.

During 1929-33 studies on the utilization and cost of power in growing corn were made in the Corn Belt and in growing cotton in the Yazoo Delta of the Cotton Belt.

During the period 1929-36 studies relating to the development of machinery and methods for the control of the pink boll worm of cotton were under way in south Texas with headquarters at Presidio.

In 1930-1932 studies were conducted in the neighborhood of Beaumont, Texas, on the harvesting and artificial drying of rice. At that time combining of rice in that region was not considered expedient and it was found that the artificial drying of rice had to be performed in several stages to prevent checking of the rice and lowering its grade.

In 1931-37 investigations of equipment for spraying and dusting for pest control of southern field crops were in progress with headquarters at Albany, Georgia. These had to do mainly with equipment for controlling by spraying certain pecan pests and plant diseases.

In 1931-1944 - corn production machinery investigations at Ames, Iowa. These studies had to do with the power, labor and machinery requirements for growing and harvesting corn.

In 1931 the cotton production machinery studies were inaugurated at Auburn, Alabama. The construction of the Tillage Laboratory here in 1935 was the result of tillage work done on this project. Here in 9 soil bins each 250 feet by 20 feet and containing a different type of soil 2 feet deep, critical studies of tillage equipment are conducted. A power car furnishes the motive power and carries a special recording dynamometer which measures and records the forces necessary to hold the tillage tool being tested in its working position.

1933-37 - Japanese beetle control machinery investigations - Moorestown, N.J.

1937-39 - Weed control machinery project - Logan, Utah.

In 1937 - Limited studies of sweetpotato production and harvesting machinery were started at Laurel, Mississippi. This project later moved to Ellisville, Mississippi, thence to Clemson, South Carolina, where it is now located.

1942-1944 - Emergency Rubber Projects.

Guayule production and harvesting equipment, headquarters at Salinas, Calif. For transplanting guayule seedlings several types of commercial transplanters were adapted.

A four-row harvester for field scale guayule seed harvesting and a two-row machine for plot seed harvesting were developed.

A shrub plow was devised for harvesting the guayule plant.

For baling the shrub for storing, a baler with a vertical and unusually large baling chamber was adapted for the purpose.

Goldenrod production and harvesting equipment, headquarters at Waynesboro, Georgia. For transplanting stolon cuttings a manual type transplanter was modified for the purpose.

Planting was also accomplished by broadcasting with a slightly modified manure spreader.

For harvesting first year plantings of goldenrod a power take-off driven corn binder performed satisfactorily but for succeeding years a grain binder was necessary because of the spread of the shoots and plants.

Use was made of a spike tooth thresher cylinder for stripping the leaves of the goldenrod. This worked fairly well except that such waste material as small stems, flower heads, etc. were included. The use of a suction device, however, aided in removing some of it.

Kok-saghyz (Russian dandelion) production and harvesting equipment, headquarters at Beltsville, Maryland.

It was found that with reasonable care regular vegetable crop seeders can be used for seeding vernalized kok-saghyz seed.

The studies indicated that the pull type multiple-row truck crop cultivator was more flexible and accurate than the tractor mounted beet cultivator with which it was compared; that weeding knives are best adapted for cultivating mineral soil areas; and that disc cultivator tools are best adapted for peat and muck and poor scouring soils.

The four-row seed harvester developed on this project appeared to be correct in principle, and some eighty units built for the Forest Service performed satisfactorily.

For digging kok-saghyz roots two modified potato diggers each fitted with a special digging shovel and clod breaker were used - one pulled, the other tractor mounted.

Two types of experimental toppers were developed - one making use of a revolving disc, the other a double bladed arrangement.

1944 - Sugarcane production and harvesting machinery project inaugurated at Houma, Louisiana.

1946 - Cotton production and harvesting machinery investigations initiated at Stoneville, Mississippi.

Goldenrod production and harvesting equipment, headquarters at Waynesboro, Georgia. For transplanting cotton cuttings a manual type transplanter was modified for the purpose.

Planting was also accomplished by broadcast with a slightly modified manure spreader.

For harvesting first year plantings of Goldenrod a power take-off driven corn binder performed satisfactorily but for succeeding years a grain binder was necessary because of the spread of the shoots and plants.

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